

**REMARKS**

The Office Action mailed March 21, 2006 has been received and reviewed. Claims 1-4, 6-9, 36 and 39-45 are currently pending in the application. Claims 1-4, 6-9, 36 and 39-45 stand rejected. Claims 46-48 have been added herein. Claims 1-45 are cancelled. Amendments and cancellations have been made without prejudice or disclaimer. No new matter has been added. Reconsideration is respectfully requested.

**Examiner Interview**

Applicants kindly thank the Examiner for the personal interview granted on February 28, 2006. The interview summary provided by the Examiner indicated that Jon Eric Angell, Anne Marie Falk, Michel Georges and Yury Colton attended the interview. The substance of the interview included a discussion of the rejection of the claims and description of the genetic markers associated with the parentally imprinted QTL associated with muscle mass and/or fat deposition in pigs. The Examiner agreed to consider claims for paternally imprinted QTLs associated with muscle mass and/or fat deposition in pigs associated with described and linked markers. If further comments are necessary regarding the substance of the interview, the Office is kindly requested to contact the applicants' attorney at the address or telephone number given herein.

**Claim Rejections—35 U.S.C. § 112, first paragraph**

Claims 1-4, 6-9, 36 and 39-45 stand rejected under 35 U.S.C. § 112, first paragraph because the specification allegedly fails to enable the scope of these claims. Claims 1-4, 6-9, 36 and 39-45 have been cancelled thus mooted the rejection of these claims.

Applicants acknowledge the Examiner's statement on page 3 of the Office Action asserting the claim scope for which the specification is allegedly enabling. In accordance with the Examiner's statement, applicants have presented claims 46-48 herein and respectfully submit that the specification is enabling for claims 46-48.

More particularly, it is respectfully submitted that the specification is enabling for a

method for selecting a male or female pig for breeding by identifying a pig having a paternally imprinted quantitative trait locus (QTL) associated with larger muscle mass and/or decreased fat deposition.

To satisfy the enablement requirement, a specification is to teach those skilled in the art how to make and use the scope of the claimed invention without undue experimentation. *Genentech, Inc. v. Novo Nordisk A/S*, 108 F.3d 1361, 1365 (Fed. Cir. 1997). Furthermore, as discussed by the Examiner, when determining undue experimentation, the Office and the courts look to the factors outlined in *In re Wands*, 858 F.2d 731, 737 (Fed. Cir. 1988). The factors include 1) the quantity of experimentation necessary, 2) the amount of direction or guidance presented, 3) the presence or absence of working examples, 4) the nature of the invention, 5) the state of the prior art, 6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and 8) the breadth of the claims.

The Examiner asserts that the specification only has an enabling disclosure for selecting a male pig for breeding. However, with all due respect, applicants submit that the specification includes detailed direction, guidance and working examples for mapping and selecting for the desired paternally imprinted QTL in both male and female pigs. Moreover, the detailed methods presented in the specification are well known to those of skill in the art and may have been used without undue experimentation to make and use the claimed invention.

Specifically, on page 10, line 23, through page 11, line 24 the specification describes the mapping of the paternally imprinted QTL using 200 male and female offspring from an F<sub>2</sub> intercross. Similarly, the specification on page 11, line 25 through page 12, line 33 describes mapping the paternally imprinted QTL using an initial sample of 677 F<sub>2</sub> male and female offspring followed by genotyping of another 355 F<sub>2</sub> male and female offspring.

Page 25, lines 10 through describes the genetic analysis of 200 F<sub>2</sub> male and female offspring using microsatellite markers linked to the desired paternally imprinted QTL. Furthermore, Example 2, beginning on page 32, includes detailed guidance and instruction on how male and female pigs were genotyped using PCR amplification of microsatellite markers. Therefore, applicants submit that the specification provides specific instructions and working examples that would have enabled one of skill in the art to select a pig, male or female, with the

desired paternally imprinted QTL associated with larger muscle mass and/or decreased fat deposit without undue experimentation.

The Examiner also asserts that “identifying that a pig’s chromosome 2 comprises the genetic markers described would not necessarily indicate that the pig had a paternally imprinted QTL.” (Office Action, page 5). However, applicants respectfully submit that the specification includes significant results, obtained by following the disclosed protocols which are well accepted by those in the art, showing that the QTL identified on chromosome 2 of the pig at position 2p1.7 is a paternally imprinted QTL. Specifically, Figures 3a, 3b and 3c include lodscore curves with statistically significant results verifying the presence of a paternally imprinted QTL on chromosome 2 of the pig while there is no evidence at all for the segregation of a QTL when studying the chromosomes transmitted maternally. (Specification, page 39, lines 3 through 31). Therefore, the specification provides working examples of a paternally imprinted QTL located on chromosome 2 of the pig at position 2p1.7 and associated with larger muscle mass and/or decreased fat deposition in the pig.

Moreover, the Examiner asserts that the QTL is not associated with muscle mass. Applicants respectfully disagree, and point out that the specification includes many references to the association of the paternally imprinted QTL with both larger muscle mass and/or decreased fat deposition in a pig. Specifically, the term “larger muscle mass” finds basis from page 13, lines 13 and 20 of the specification. Furthermore, the specification, *inter alia*, on page 10, line 21, page 12, line 34, page 17 line 16 and page 26, line 25 through page 27, line 5, describes that the paternally imprinted QTL has effects on the potential muscle mass and/or fat deposition in a pig.

It is also submitted that the person skilled in the art is well aware of the fact that via selection of the female pigs (dams or sows) having the QTL, the frequency of the QTL in a population can be increased. This selection has as a result that the population is moved towards producing more homozygous male pigs (sires or boars). Thus, it is possible to improve the frequency of homozygous male pigs in a population without actually selecting male pigs having the said QTL, but solely by selecting for female pigs having the QTL. Populations improved by such methods of selecting female pigs can suitably be used for the production of males having the QTL in homozygous state, which may serve as fathers in crosses to produce offspring having

larger muscle mass and/or decreased fat deposition. Therefore, the present invention is not limited to the selection of male pigs.

In summary, the specification includes detailed instructions and substantial guidance for the entire scope of the claims. The specification includes protocols and working examples well understood by those in the art. As such, applicants respectfully submit that the specification would have enabled those of ordinary skill in the art to make and use the scope of claims 46-48 without undue experimentation.

**Claim Rejections—35 U.S.C. § 112, second paragraph**

Claims 42-44 are rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 42-44 are cancelled herein thus, mooted the rejection of these claims.

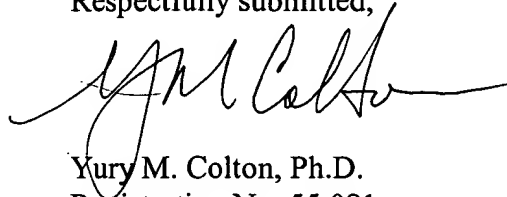
**Claim Objection**

Claim 42 is objected to as allegedly being of improper dependent form. Claim 42 has been cancelled herein thus, mooted the rejection of this claim.

**CONCLUSION**

In view of the foregoing amendments and remarks, the applicants submit that the claims define patentable subject matter and a notice of allowance is requested. Should questions exist after consideration of the foregoing, the Office is kindly requested to contact the applicants' attorney at the address or telephone number given herein.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Yury M. Colton', written over a horizontal line.

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